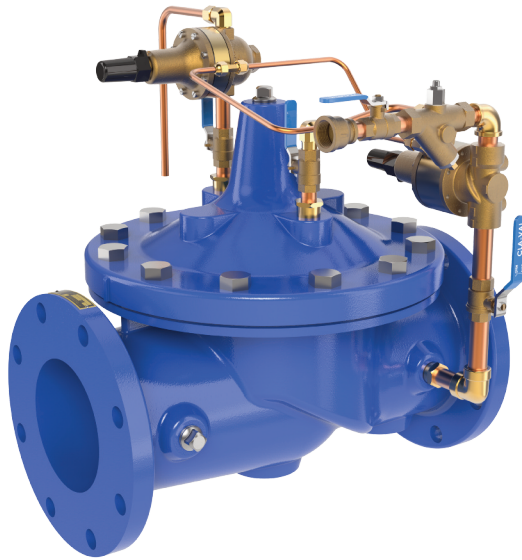




— MODEL — **52-01**

# Pressure Relief & Surge Anticipator Valve



- **Protects Against Water Hammer Surges**
- **Opens On Initial Low Pressure Wave**
- **Closes Slowly To Prevent Subsequent Surges**
- **Adjustable Over A Wide Range of Settings**

The Cla-Val Model 52-01 Surge Anticipator Valve is indispensable for protecting pumps, pumping equipment and all applicable pipelines from dangerous pressure surges caused by rapid changes of flow velocity within a pipeline.

When pumping systems are started and stopped gradually, harmful surges do not occur. However, should a power failure take place, the abrupt stopping of the pump can cause dangerous surges in the system which could result in severe equipment damage.

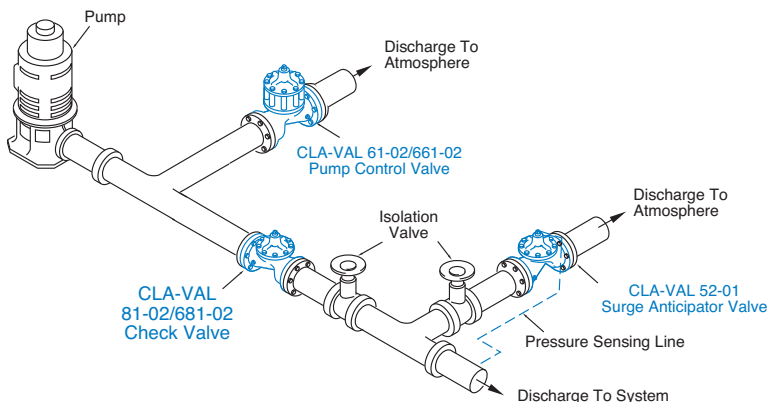
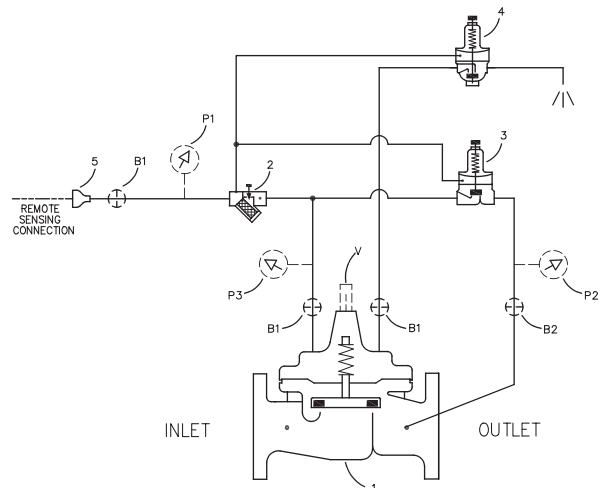
Power failure to a pump will usually result in a down surge in pressure, followed by an up surge in pressure. The surge control valve opens on the initial low pressure wave, diverting the returning high pressure wave from the system. In effect, the valve has anticipated the returning high pressure wave and is open to dissipate the damage causing surge. The valve will then close slowly without generating any further pressure surges.

## Schematic Diagram

Item	Description
1	100-01 Hytrol Main Valve
2	X42N-3 Strainer Needle Valve
3	CRL-60 Pressure Relief Control
4	CRA Pressure Reducing Control
5	Bell Reducer

## Optional Features

Item	Description
B	CK2 Isolation Valve
P	X141 Pressure Gauge
V	X101 Valve Position Indicator



## Typical Application

The 52-01 discharges to atmosphere from a tee in the pump discharge header. The valve anticipates surges caused by power failure as well as acting as a standard over pressure relief valve.

Note: The remote pressure sensing line should be  $\frac{3}{4}$ " minimum I.D. installed with a  $2^\circ$  slope from the valve to the pipeline to avoid air pockets.

Note: We recommend protecting tubing and valve from freezing temperatures.

## Model 52-01 (Uses 100-01 Hytrol Main Valve)

### Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class				
		Flanged			Grooved	Threaded
Grade	Material	ANSI Standards*	150 Class	300 Class	300 Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400	400
UNS 87850	Bronze	B16.24	225	400	400	400

Note: \* ANSI standards are for flange dimensions only.  
 Flanged valves are available faced but not drilled.  
 ‡ End Details machined to ANSI B2.1 specifications.  
**Valves for higher pressure are available; consult factory for details**

### Materials

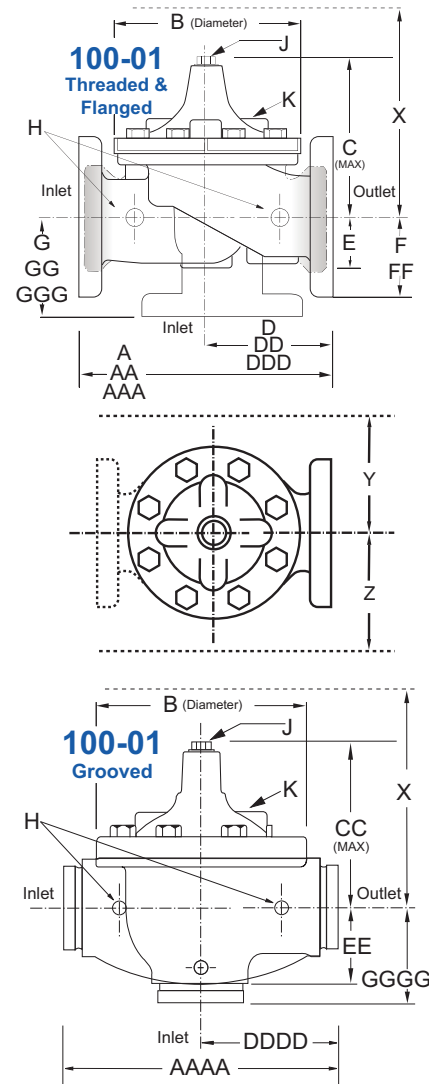
Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1" - 36"	1" - 16"	1" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

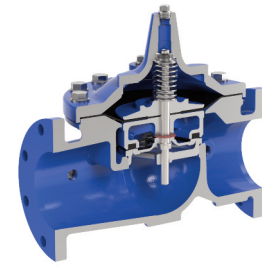
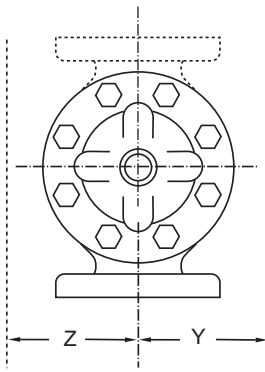
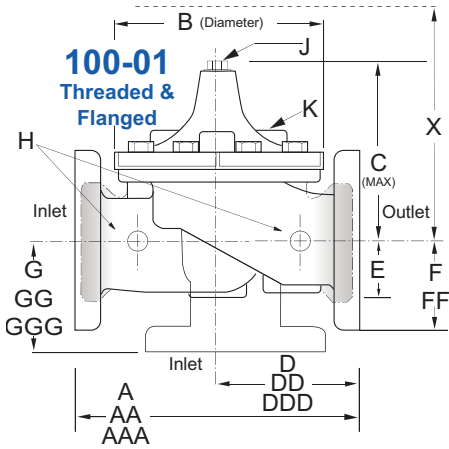
### Model 52-01 Dimensions (In Inches)

Valve Size (Inches)	1	1¼	1½	2	2½	3	4	6	8	10	12	14	16	18	20	24	30	36
A Threaded	7.25	7.25	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	—	—	8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50	63.00	72.75
AAA 300 ANSI	—	—	9.00	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	47.64	53.62	63.24	64.50	74.75
AAAA Grooved End	—	—	8.50	9.00	11.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—	—	—
B Diameter	5.62	5.62	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16	56.00	66.00
C Maximum	5.50	5.50	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	39.06	41.90	43.93	54.60	59.00
CC Maximum Grooved End	—	—	4.75	5.75	6.88	7.25	9.31	12.12	14.62	—	—	—	—	—	—	—	—	—
D Threaded	3.25	3.25	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	—	—	4.00	4.75	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	30.75	—	—
DDD 300 ANSI	—	—	4.25	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	31.62	—	—
DDDD Grooved End	—	—	—	4.75	—	6.00	7.50	—	—	—	—	—	—	—	—	—	—	—
E	1.12	1.12	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75	21.31	24.56
EE Grooved End	—	—	2.00	2.50	2.88	3.12	4.25	6.00	7.56	—	—	—	—	—	—	—	—	—
F 150 ANSI	—	—	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	19.25	22.50	28.50
FF 300 ANSI	—	—	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.00	16.50	19.25	24.00	30.00
G Threaded	1.88	1.88	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	—	—	4.00	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—	22.06	—	—
GGG 300 ANSI	—	—	4.25	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	22.90	—	—
GGGG Grooved End	—	—	—	3.25	—	4.25	5.00	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.25	0.25	0.25	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00	2.00	2.00
K NPT Cover Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	0.40	0.40	0.40	0.60	0.70	0.80	1.10	1.70	2.30	2.80	3.40	4.00	4.50	5.10	5.63	6.75	7.50	8.50
Approx. Ship Weight (lbs)	15	15	15	35	50	70	140	285	500	780	1165	1600	2265	2982	3900	6200	7703	11720
Approx. X Pilot System	11	11	11	13	14	15	17	29	31	33	36	40	40	43	47	68	79	85
Approx. Y Pilot System	9	9	9	9	10	11	12	20	22	24	26	29	30	32	34	39	40	45
Approx. Z Pilot System	9	9	9	9	10	11	12	20	22	24	26	29	30	32	34	39	42	47

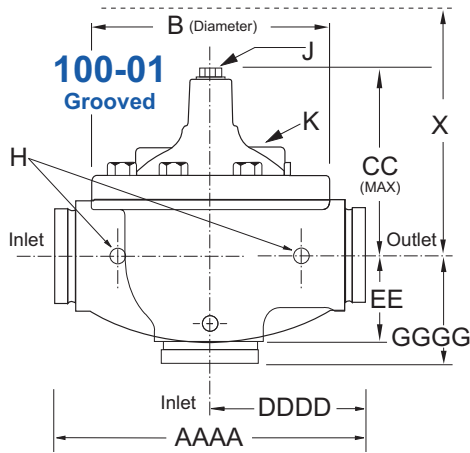
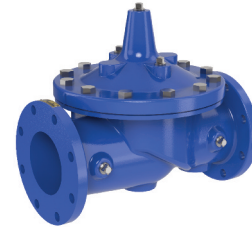
Note: The top two flange holes on valve size 36 are threaded to 1 1/2"-6 UNC.



**Model 52-01 Metric Dimensions** (Uses 100-01 Hytrol Main Valve)



**Model 100-01 Full Port Hytrol Main Valve**



**Surge View Analysis Overview**

“SurgeView” is available as a service to specifying engineers to aid in the selection the best Cla-Val products to prevent and relieve surges.

The software plots the results of the transient in real time and “animates” the transient waves over the period of the transient event.

Learn more at: [www.cla-val.com/engineering-resources.php](http://www.cla-val.com/engineering-resources.php)

**Model 52-01 Dimensions** (In mm)

Valve Size (mm)	25	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900
A Threaded	184	184	184	238	279	318	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	—	—	216	238	279	305	381	508	645	756	864	991	1051	1168	1321	1562	1600	1848
AAA 300 ANSI	—	—	229	254	295	337	397	533	670	790	902	1029	1105	1210	1326	1606	1638	1899
AAAA Grooved End	—	—	216	228	279	318	381	508	645	—	—	—	—	—	—	—	—	—
B Diameter	143	143	143	168	203	232	292	400	508	600	711	832	902	1054	1143	1350	1422	1676
C Maximum	140	140	140	165	192	208	270	340	406	435	530	614	635	992	1064	1116	1387	1499
CC Maximum Grooved End	—	—	120	146	175	184	236	308	371	—	—	—	—	—	—	—	—	—
D Threaded	83	83	83	121	140	159	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	—	—	102	121	140	152	191	254	322	378	432	495	528	—	—	781	—	—
DDD 300 ANSI	—	—	108	127	149	162	200	267	337	395	451	514	549	—	—	803	—	—
DDDD Grooved End	—	—	—	121	—	152	191	—	—	—	—	—	—	—	—	—	—	—
E	29	29	29	38	43	52	81	110	135	235	273	321	394	329	381	451	541	624
EE Grooved End	—	—	52	64	73	79	108	152	192	—	—	—	—	—	—	—	—	—
F 150 ANSI	—	—	64	76	89	95	114	140	171	203	241	267	298	381	419	489	572	724
FF 300 ANSI	—	—	78	83	95	105	127	159	191	222	260	292	324	381	419	489	610	762
G Threaded	48	48	48	83	102	114	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	—	—	102	83	102	102	127	152	203	219	349	378	399	—	—	560	—	—
GGG 300 ANSI	—	—	102	89	110	111	135	165	216	236	368	397	419	—	—	582	—	—
GGGG Grooved End	—	—	—	83	—	108	127	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.25	0.25	0.25	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00	2.00	2.00
K NPT Cover Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	10	10	10	15	18	20	28	43	58	71	86	102	114	130	143	171	190	216
Approx. Ship Weight (kgs)	7	7	7	16	23	32	64	129	227	354	528	726	1027	1353	1769	2812	3494	5316
Approx. X Pilot System	280	280	280	331	356	381	432	737	788	839	915	1016	1016	1093	1194	1728	2007	2159
Approx. Y Pilot System	229	229	229	229	254	280	305	508	559	610	661	737	762	813	864	991	1016	1143
Approx. Z Pilot System	229	229	229	229	254	280	305	508	559	610	661	737	762	813	864	991	1067	1194

\*Consult Factory

52-01 Valve Selection	100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes																			
	Inches	1	1¼	1½	2	2½	3	4	6	8	10	12	14	16	18	20	24	30	36	
	mm	25	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900	
Basic Valve 100-01	Pattern	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G	G	G, A	G	G	
	End Detail	T	T	T, F, Gr*	T, F, Gr	T, F, Gr*	T, F, Gr	F, Gr	F, Gr*	F, Gr*	F	F	F	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	55	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000	14000	17000	25000	42000	50000	
	Maximum Surge	120	210	280	470	670	1000	1800	4000	7000	11000	16000	19000	25000	31000	39000	56500	63000	85000	
Suggested Flow (Liters/Sec)	Maximum	3.5	6	8	13	19	29	50	113	195	309	442	530	694	883	1073	1577	2650	3150	
	Maximum Surge	7.6	13	18	30	42	63	113	252	441	693	1008	1197	1577	1956	2461	3560	3975	5360	

100-01 Series is the full internal port Hytrol.

\*Globe Grooved Only



**CRL-60 Pilot Control**  
Direct-acting, spring loaded, diaphragm type relief pilot capable of opening and closing within very close pressure limits.



**CRA Pilot Control**  
Automatically reduces a higher inlet pressure to a lower outlet pressure. Direct acting, spring loaded, diaphragm type - hydraulic or pneumatic operation.

### Adjustment Ranges

#### High Pressure Pilot (CRL-60)

- 0 to 75 psi
- 20 to 200 psi \*
- 100 to 300 psi
- 250 to 600 psi

#### Low Pressure Pilot (CRA)

- 2 to 30 psi
- 15 to 75 psi
- 30 to 300 psi \*

\*Supplied unless otherwise specified  
Other ranges available, please consult factory

### Temperature Range

Water: to 180°F

### Materials

#### Standard Pilot System Materials

- Pilot Control: Low Lead Bronze
- Trim: Stainless Steel 303
- Rubber: Buna-N® Synthetic Rubber

#### Optional Pilot System Materials

Pilot systems are available with optional Aluminum, Stainless Steel or Monel materials.

### When Ordering, Specify:

1. Catalog No. 52-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

### Valve Options

X141 Pressure Gauge



X101AR Valve Position Indicator with Air Release



X101 Valve Position Indicator



X144 e-FlowMeter



X43H Strainer



Stainless Steel Pilot